REMARKS

INTRODUCTION:

In accordance with the foregoing, claims 1, 5 and 8 have been amended, and new claim 13 has been added. No new matter is being presented, and approval and entry are respectfully requested.

Claims 1, 4, 5, 7, 8, 11, 12 and 13 are pending and under consideration. Reconsideration is respectfully requested.

REJECTION UNDER 35 U.S.C. §102:

A. In the Office Action, at page 2, claims 1, 5 and 8 were rejected under 35 U.S.C. §102(b) as being anticipated by Martis (USPN 5,252,144; hereafter, Martis). This rejection is traversed and reconsideration is requested.

Independent claims 1, 5 and 8 have been amended to include a linear BH loop.

It is respectfully submitted that Martis invention deals only with crystalline, and in particular, nanocrystalline alloys derived from amorphous alloys as recited in Martis. The present invention deals only with amorphous alloys, as is recited in claims 1, 5 and 8 of the present invention. Because of this difference, the Martis material, which is based on nanocrystalline alloys are not suited for a band pass filter, as are the amorphous alloys of the present invention as described below.

The band pass filter of the present invention requires a material whose permeability is constant over a wide frequency range, as shown in Fig. 4a of the present application, and which is also constant over a wide bias field, as depicted in Fig. 3 and Fig. 4b of the present invention. The nanocrystalline alloys described in Martis have a non-linear BH loop, as exampled in Fig.1 of Martis, and hence, do not have a constant permeability over a wide bias field range. The present invention recites a linear BH loop (see Fig. 3 of the present invention and amended claims 1, 5 and 8), and hence, a constant permeability with increasing bias field. In other words, the present invention meets both of the criteria for a band pass filter material, whereas nanocrystalline alloys of Martis meet only one criterion, making the Martis material unacceptable as a band pass filter material.

For a further clarification between a band pass filter of the present invention and an EMI (electromagnetic interference) filter of Martis, it should be noted that implementation of a band pass filter, as depicted in Fig. 2A of the present application, allows signal passage from the input

signal side (See Fig. 2A) with a selected, predetermined frequency range with a well-defined center resonance frequency fc (see Fig. 2B) with a certain bandwidth BW (see Fig. 2B) to the output signal side (See Fig. 2A). Thus, a capacitor C (see Fig. 2B) is needed for a bandpass filter. The central resonance frequency fc of a bandpass filter, in accordance with and illustrated by embodiments of the present invention, is given by $1/[2\pi(LC)^{1/2}]$, as described in the specification (see "Detailed Description" section of the present invention application), which varies with L, the inductance, which is proportional to the permeability of the core material. Thus, to keep fc at a constant value in order to have a bandpass filter for a predetermined frequency, L has to be constant with the applied field. The EMI filter of Martis is a broadband component, and thus, requires a high permeability over a wide frequency range, and therefore, does not have to resonate, needing no capacitor. Hence, there is a fundamental difference between an EMI filter of Martis and a band pass filter of the present invention.

Hence, it is respectfully submitted that claims 1, 5 and 8 are not anticipated under 35 U.S.C. §102(b) by Martis (USPN 5,252,144).

B. In the Office Action, at page 2, claims 1, 4-5, 7-8 and 11 were rejected under 35 U.S.C. §102(b) as being anticipated by Yoshihito et al. (UK 2,138,215; hereafter, Yoshihito). This rejection is traversed and reconsideration is requested.

Independent claims 1, 5 and 8 have been amended to include a linear BH loop.

The amorphous wound core of Yoshihito is suitable for use in a normal-mode noise filter or in an output smoothing device. The amorphous wound core of Yoshihito comprises a gap and has good DC current superposition characteristics and high complex permeability (see, e.g., the Abstract of Yoshihito). As claim 1 of Yoshihito illustrates, the Yoshihito core requires a physical gap in the core, whereas the core of the present invention does not recite a gap and yet has a good DC current superposition characteristics and a high permeability reaching as high as 2700 (see Fig. 8 of the present application). Compared with the level of high permeability of the present claimed invention, Yoshihito only reaches a permeability of about 200 (see Fig. 5 and 6 of Yoshihito). For a normal-mode noise filter of Yoshihito, the incremental permeability $\mu\Delta$ of the order of 200 with increasing superposition DC field, H_{DC}, as depicted in Fig. 8 of Yoshihito is sufficient. However, for a band pass filter of the present application, as described and illustraated for embodiments of the invention, $\mu\Delta$ as a function of H_{DC} must be close to zero so that the resonance frequency shift as depicted in Fig. 5 of the present application becomes close to zero, as the relationship $fc=1/[2\pi(LC)^{1/2}]$ indicates. Thus, a core of Yoshihito is not suited for uses that are suitable for a core of a band pass filter of the present claimed invention.

Thus, it is respectfully submitted that independent claims 1, 5, and 8 are not anticipated by Yoshihito et al. (UK2,138,215A). Since claims 4, 7, and 11 depend from claims 1, 5 and 8, respectively, it is submitted that claims 4, 7 and 11 are not anticipated by Yoshihito et al. (UK2,138,215A) for at least the reasons that claims 1, 5, and 8 are not anticipated by Yoshihito et al. (UK2,138,215A).

C. In the Office Action, at pages 2-3, claims 1, 4-5, 7-8 and 11-12 were rejected under 35 U.S.C. §102(b) as being anticipated by Petzold et al. (WO 99/45643; hereafter, Petzold). This rejection is traversed and reconsideration is requested.

Independent claims 1, 5 and 8 have been amended to include a linear BH loop.

Petzold recites a low-pass filter comprising a plurality of longitudinal inductances connected in series. For example, Petzold may utilize a Co-based amorphous metal alloy, and the Petzold low-pass filter has a substantially constant permeability over a field strength range of at most -8 to +8 A/cm, as Fig. 3 and 4 indicate. 8 A/cm corresponds to 10 Oe (notice the units in Fig. 3 and 4 of the corresponding U.S. Patent 6,559,808 to Petzold are in A/cm, whereas the units in the figures of the present application are in Oe). Thus, it is respectfully submitted that the Petzold core does not consist essentially of an Fe-based amorphous metal ribbon and has a substantially constant permeability over a field strength range of -15 to +15 Oe, as the Examiner states in the last paragraph of page 2 in his Office Action.

In contrast, the present claimed invention recites a pass-band filter that comprises an inductor having a core that consists essentially of an Fe-based amorphous metal alloy ribbon, a linear BH loop, and has a substantially constant permeability over a frequency range of about 1 to 1000 kHz. The Petzold core belongs to the prior art core shown in Fig. 5 of the present application. As the curve "Present Invention" in Fig. 5 of the present application indicates, low resonance frequency shifts persist for field strengths beyond 10 Oe, which is the upper limit of the prior art core of Petzold.

Also, as may be seen from Fig. 4 of Petzold '808, the Petzold low-pass fiter does not disclose a permeability in a range of 400-1000 kHz over a frequency range of 1 to 1000 kHz

Regarding claim 12 of the present application, Petzold discloses a permeability in a range of 1000 to 50,000 over a frequency range of 1 to 1000 kHz (1MHz), as Fig. 5 of the corresponding U.S. Petzold '808 indicates, which is a different range from the permeability range of 400 to 1000 in claim 12 of the present application. The different ranges indicate that the bandpass filter of claim 12 of the present invention can and do have different uses than the Petzold low-pass filter.

Hence, it is respectfully submitted that amended independent claims 1, 5, 8 and 12 are not anticipated by Petzold et al. (W099/45643 or the corresponding US Patent 6,559,808). Since claims 4, 7, and 11 depend from amended claims 1, 5 and 8, respectively, it is submitted that claims 4, 7 and 11 are not anticipated by Petzold et al (W099/45643; US Patent 6,559,808) for at least the reasons that amended claims 1, 5 and 8 are submitted not to be anticipated by Petzold et al (W099/45643; US Patent 6,559,808).

NEW CLAIM:

New claim 13 recites that the features of the present invention include a bandpass filter, comprising: an inductor having a core comprising an Fe-based amorphous metal alloy ribbon, and having a linear BH loop, wherein the permeability of the core is substantially constant over a field strength range of approximately -15 to +15 Oersteds (Oe).

Nothing in the prior art teaches or suggests such. It is submitted that this new claim distinguishes over the prior art.

CONCLUSION:

In accordance with the foregoing, it is respectfully submitted that all outstanding objections and rejections have been overcome and/or rendered moot, and further, that all pending claims patentably distinguish over the prior art. Thus, there being no further outstanding objections or rejections, the application is submitted as being in condition for allowance which action is earnestly solicited.

If the Examiner has any remaining issues to be addressed, it is believed that prosecution can be expedited by the Examiner contacting the undersigned attorney for a telephone interview to discuss resolution of such issues.

If there are any underpayments or overpayments of fees associated with the filing of this Amendment, please charge and/or credit the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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